

# Material Safety Data Sheet

Aluminum Company of America, 1501 Alcoa Building, Pittsburgh, PA 15219



No. 384P

PORSF  
11-312510  
0815189

Common Name	Phone	Date	Revised
Aluminum Alloys	Emergency: 412-553-4001	1984-12-03	1989-08-15

Prepared by the Hazardous Materials Control Committee. Phone 412-553-2881 for routine information.

356 A+B, Tel 2.713, 319, Alum. Scrap

## SECTION I. Material Description

Chemical Name & Formula: Mixture (See Attachments)

Other Designation: None

CAS No.: See Attachments

Manufacturer: Alcoa

Product Use: Various fabricated aluminum parts and products

## SECTION II. Ingredients

## Occupational Exposure Limits

See Attachments for ingredients by alloy series and exposure limits.

## SECTION III. Physical Data

Physical Form: Solid - ingot, castings or wrought (sheet, plate, wire, rod, bar, extrusions, forgings, etc.)

Boiling Temperature: NA

Freeze-Melt Temperature: Wide range: generally 900-1200°F (482-649°C)

Vapor Pressure (mm): NA

Vapor Density (air = 1): NA

Evaporation Rate: NA

Specific Gravity: NA

Density: Range: generally 2.63 - 3.12 g/cc (0.095-0.113 lb/in³)

Water Solubility: None

pH: NA

Color: Silvery

Odor: None Odor Threshold (ppm): NA

Coefficient of water/oil distribution: NA

## SECTION IV. Fire and Explosion Data

Flashpoint:	Auto-Ignition Temp.:	Flammability Limits in Air: Upper:	Lower:
NA	NA	NA	

Castings, ingots, sheet, plate, forgings, extrusions, etc. do not present fire or explosion hazards under normal conditions. Use firefighting methods and materials that are appropriate for surrounding fire.

Small chips, fine turnings, and dust may ignite readily. Use coarse water spray on chips, turnings, etc. Use Class D extinguishing agents or dry sand on fines. Do not use halogenated extinguishing agents on small chips/fines.

Firefighters should wear self-contained breathing apparatus and full protective clothing when appropriate.

Dust clouds may be explosive. Prevent formation of a dust cloud.

Molten aluminum may explode on contact with water. It may also react violently with water, rust, certain metal oxides (e.g., oxides of copper, iron, and lead), and nitrates (e.g., ammonium nitrate and fertilizers containing ammonium nitrate).

Handling remelt ingot presents special hazards as described below:

USEPA SF



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For Remelt Ingot Only

Water and other forms of contamination on or contained in remelt ingot are known to have caused explosions in melting operations. While all efforts are made to minimize surface roughness and internal voids in the casting of remelt ingot, there remains the possibility of moisture or entrapment. Precautions are mandatory to minimize the safety risks during melting operations.

The following minimum guidelines should be observed:

1. Inspect all remelt ingot prior to furnace charging and remove surface contamination, such as ice, snow, deposits of grease and oil or other surface contamination resulting from shipment or storage.
2. Store ingot in dry, heated areas with any cracks or cavities pointed downward.
3. Preheat and dry ingot adequately before charging it into a furnace. This is typically done by the use of ovens, homogenizing furnaces, gas flame, or the placement of ingot on furnace sills, if they are suitable for that purpose.
4. Perform the furnace charging sequence in such a way that submergence of remelt ingot in molten aluminum is avoided.

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SECTION V. Reactivity Data

Stable under normal conditions of use, storage, and transportation.

For finely divided aluminum (e.g., small chips, fines):

With water: Generates hydrogen and heat slowly. Water/aluminum mixtures may be hazardous when confined.

With heat: Oxidizes at a temperature-dependent rate.

With strong oxidizers: Violent reaction with much heat generation.

With acids and alkalies: Reacts to generate hydrogen.

With halogenated compounds: Halogenated hydrocarbons can react violently with finely divided aluminum.

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SECTION VI. Health Hazard Information (See Section II for exposure limits.)

Aluminum dust/fines and fumes are a low health risk by inhalation. For standard operations (e.g., milling, cutting, grinding), aluminum should be treated as a nuisance dust and is so defined by the American Conference of Governmental Industrial Hygienists (ACGIH).

According to AIHA Hygienic Guide, Aluminum:

Toxicity by ingestion: None expected

Skin and eyes: Not an irritant

The potential for overexposure to copper fume may exist when welding, flame cutting, etc. on alloys containing amounts of copper greater than 2.5%. See Attachments for specific alloys. Overexposure to copper fume can result in upper respiratory tract irritation, nausea, and metal fume fever.

Overexposure to nickel dust and fume is possible. Exposure to nickel oxide in excess of recommended limits has been associated with pneumoconiosis in animal studies. Nickel metal and its oxides are animal carcinogens when given intramuscularly, while certain nickel compounds are carcinogenic by inhalation, producing lung tumors.

Carcinogenicity by inhalation has not been clearly established for nickel metal and its oxide. Nickel and its compounds are listed in the latest Annual Report on Carcinogens as published by the National Toxicology Program (NTP) and by the International Agency for Research on Cancer (IARC).

Certain chromium compounds have been shown to cause lung cancer by inhalation. Chromium and its compounds are listed in the latest Annual Report on Carcinogens by the National Toxicology Program (NTP) and by the International Agency for Research on Cancer (IARC).

Welding aluminum, plasma arc cutting, and arc spray metalizing can generate ozone. Overexposures to ozone can result in mucous membrane irritation, as well as pulmonary changes including irritation, congestion and edema. Reference Alcoa MSDS No. 214 for hazards and appropriate safeguards concerning welding with aluminum.

First Aid:

Inhalation: If irritation or pulmonary symptoms develop, consult a physician.  
Skin and eyes: If irritation develops, consult a physician.

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**SECTION VII. Spill, Leak & Disposal Procedures**

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Collect scrap for remelting.

RCRA Hazardous Waste No. Not Federally Regulated

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**SECTION VIII. Special Protection Information**

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Use with adequate ventilation to meet exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protection. Select the appropriate respirator (e.g. dust and fume respirator) based on concentrations of actual or potential airborne contaminants present.

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**SECTION IX. Special Precautions & Comments**

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Handling molten aluminum presents special hazards. Ref: Alcoa MSDS No. 478.

Handling remelt ingot presents special hazards. Ref: Alcoa MSDS No. 516.

Handling aluminum powder and granule products presents special hazards.

Ref: Alcoa MSDS Nos. 123, and 125.

Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710).

The ingredients in this mixture are reportable under SARA Title III as shown:

Nickel - Section 302

Chromium, Copper, Nickel, Zinc - CERCLA

Aluminum (fume and dust only), Chromium, Copper, Manganese, Nickel, Zinc  
- Section 313

If particulates or fumes are generated during processing, this material would fit the EPA Hazard Category of an Immediate (for alloys containing  $\geq 2.5\%$  copper) and Delayed (for alloys containing  $\geq 0.1\%$  nickel and/or chromium) Health Hazards under SARA Sections 311, 312.

If molten, this material would fit the EPA Hazard Category of Reactive Hazard under SARA Sections 311, 312.

Depending on the particular end use for this product/substance, EPA Hazard Categories other than those listed may apply. Refer to the appropriate section in this Material Safety Data Sheet for pertinent hazard information. To determine the percentage of each regulated constituent in the alloys you purchase, consult the attached tables for wrought or cast alloys.

D.O.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated  
Canadian TDG Hazard Class & PIN -- Not Regulated

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**SECTION X. References**

American Industrial Hygiene Association (AIHA) Hygienic Guide Series (revised June 1978)

U.S. Dept. of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition

Sax, N. Irving: Dangerous Properties of Industrial Materials, Van Nostrand Reinhold Co., Inc., 1984

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

**Attachments follow through Page 10:**

**Occupational Exposure Limits for Alloy Constituents**  
TWA in mg/m<sup>3</sup> unless indicated

	ACGIH		OSHA
	TLV	STEL	PEL
Al - Total dust	10.0	--	15.0 total, 5.0 respir.
fume	5.0	--	--
Cr metal	0.5	--	1.0
Cr II & III compounds	0.5	--	0.5
Cr VI compounds, water			
soluble & certain			
water insoluble	0.5	--	0.1 (Ceiling)
Cu, fume *	0.2	--	0.1
Fe, oxide fume	5.0	--	10.0
Mg, oxide fume	10.0	--	10.0 total, 5.0 respir.
Mn, dust	5.0 (Ceiling)	--	5.0 (Ceiling)
Mn, fume	1.0	3.0	1.0, 3.0 (STEL)
Ni, metal	1.0	--	1.0
Ni, soluble compounds	0.1	--	0.1
Ozone *	0.1 ppm	0.3 ppm	0.1 ppm, 0.3 ppm (STEL)
Si, nuisance dust	10.0 Total dust	--	10.0 Total dust 5.0 Respirable frac.
Sn, metal and oxides	2.0	--	2.0 Inorganic compounds except oxides
TiO <sub>2</sub> , nuisance dust	10.0	--	10.0 total, 5.0 respir.
V, fume, respirable dust as V <sub>2</sub> O <sub>5</sub>	0.05	--	0.05 0.1 (fume)
Zn, oxide fume	5.0	10.0	5.0, 10.0 (STEL)
oxide dust (nuisance)	10.0	--	10.0 total, 5.0 respir.
Zr	5.0	10.0	5.0, 10.0 (STEL)

\* Refer to Section VI for processes where copper fume and ozone limits apply.

NOTE: No LD<sub>50</sub> or LC<sub>50</sub> found for oral, dermal or inhalation routes of administration, except for:

Si - oral rat LD<sub>50</sub>: 3160 mg/kg body weight  
Mn - oral rat LD<sub>50</sub>: 9000 mg/kg body weight

ALUMINUM ALLOYS (BY SERIES)  
 INGREDIENTS WHICH MAY BE GREATER THAN OR EQUAL TO 1%  
 (0.1% for Nickel and Chromium)

CAS No.: Si (7440-21-3); Fe (7439-89-6); Cu (7440-50-8); Mn (7439-96-5);  
 Mg (7439-95-4); Cr (7440-47-3); Ni (7440-02-0); Zn (7440-66-6);  
 Al (7429-90-5); Sn (7440-31-5); Ce (7440-45-1)

**I. Castings (Ingot, Sand, Permanent Mold, & Die)**

<u>1XX.0</u>	<u>2XX.0</u>	<u>3XX.0</u>	<u>4XX.0</u>	<u>5XX.0</u>	<u>7XX.0</u>	<u>8XX.0</u>
Aluminum	Silicon	Silicon	Silicon	Silicon	Iron	Silicon
	Iron	Iron	Iron	Iron	Copper	Copper
	Copper	Copper	Nickel	Magnesium	Magnesium	Nickel
	Magnesium	Magnesium	Aluminum	Zinc	Chromium	Aluminum
	Chromium	Chromium		Aluminum	Nickel	Tin
	Nickel	Nickel			Zinc	
	Zinc	Zinc				Aluminum
	Aluminum	Aluminum				

**II. Wrought Aluminum Alloys**

<u>1XXX</u>	<u>2XXX</u>	<u>3XXX</u>	<u>4XXX</u>
Aluminum	Silicon	Silicon	Silicon
	Iron	Manganese	Iron
	Copper	Magnesium	Copper
	Manganese	Chromium	Manganese
	Magnesium	Aluminum	Magnesium
	Chromium		Chromium
	Nickel		Nickel
	Aluminum		Aluminum

<u>5XXX</u>	<u>6XXX</u>	<u>7XXX</u>	<u>8XXX</u>
Manganese	Silicon	Copper	Silicon
Magnesium	Iron	Manganese	Iron
Chromium	Copper	Magnesium	Copper
Zinc	Manganese	Chromium	Manganese
Aluminum	Magnesium	Zinc	Nickel
	Chromium	Aluminum	Zinc
	Zinc		Cerium
	Aluminum		Aluminum
			Tin

To determine the percentage of each regulated constituent in the alloys you purchase, consult the following tables:

Wrought alloys which can contain WHMIS-controlled ingredients or substances listed in Section 313 of SARA III in amounts equal to or above the minimum reporting limits. (1)

<u>Alloy</u>	<u>Cu</u>	<u>Mn</u>	<u>Cr</u>	<u>Ni</u>	<u>Miscel.</u>	<u>Footnotes/</u> <u>Aluminum</u>
1050	--	--	--	--	--	99.50 min.
1060	--	--	--	--	--	99.60 min.
1065	--	--	--	--	--	99.65 min.
1070	--	--	--	--	--	99.70 min.
1080	--	--	--	--	--	99.80 min.
1100	--	--	--	--	--	99.00 min.
1135	--	--	--	--	--	99.35 min.
1145	--	--	--	--	--	99.45 min.
1170	--	--	--	--	--	99.70 min.
1175	--	--	--	--	--	99.75 min.
1180	--	--	--	--	--	99.80 min.
1188	--	--	--	--	--	99.88 min.
1199	--	--	--	--	--	99.99 min.
1200	--	--	--	--	--	99.00 min.
1235	--	--	--	--	--	99.35 min.
1250	--	--	--	--	--	99.50 min.
1285	--	--	--	--	--	99.85 min.
1345	--	--	--	--	--	99.45 min.
1350 (2)	--	--	--	--	--	99.50 min.
1435	--	--	--	--	--	99.35 min.
2008	0.7-1.1	--	0.10	--	--	60 - 100%
2014	3.9-5.0	0.40-1.2	0.10	--	--	60 - 100%
2017	3.5-4.5	0.40-1.0	0.10	--	--	60 - 100%
2018	3.5-4.5	--	0.10	1.7-2.3	--	60 - 100%
2024	3.8-4.9	--	0.10	--	--	60 - 100%
2025	3.9-5.0	0.40-1.2	0.10	--	--	60 - 100%
2036	2.2-3.0	--	0.10	--	--	60 - 100%
2090	2.4-3.0	--	--	--	--	60 - 100%
2091	1.8-2.5	--	0.10	--	--	60 - 100%
2117	2.2-3.0	--	0.10	--	--	60 - 100%
2124	3.8-4.9	--	0.10	--	--	60 - 100%
2214	3.9-5.0	0.40-1.2	0.10	--	--	60 - 100%
2218	3.5-4.5	--	0.10	1.7-2.3	--	60 - 100%
2219	5.8-6.8	--	--	--	--	60 - 100%
2224	3.8-4.4	--	0.10	--	--	60 - 100%
2319	5.8-6.8	--	--	--	--	60 - 100%
2324	3.8-4.4	--	0.10	--	--	60 - 100%
2419	5.8-6.8	--	--	--	--	60 - 100%
2519	5.3-6.4	--	--	--	--	60 - 100%
2618	1.9-2.7	--	--	0.9-1.2	--	60 - 100%
3002	--	--	--	--	--	60 - 100%
3003	--	1.0-1.5	--	--	--	60 - 100%
3004	--	1.0-1.5	--	--	--	60 - 100%
3005	--	1.0-1.5	0.10	--	--	60 - 100%
3102	--	--	--	--	--	60 - 100%
3103	0.1	0.9-1.5	0.10	--	--	60 - 100%
3105	--	--	0.20	--	--	60 - 100%
3303	--	1.0-1.5	--	--	--	60 - 100%
4008	--	--	--	--	--	60 - 100%
4009	1.0-1.5	--	--	--	--	60 - 100%
4010	--	--	--	--	--	60 - 100%

<u>Alloy</u>	<u>Cu</u>	<u>Mn</u>	<u>Cr</u>	<u>Ni</u>	<u>Footnotes/ Miscel.</u>	<u>Aluminum</u>
4032	0.50-1.3	--	0.10	0.50-1.3	--	60 - 100%
4043	--	--	--	--	--	60 - 100%
4045	--	--	--	--	--	60 - 100%
4047	--	--	--	--	--	60 - 100%
4145	3.3-4.7	--	0.15	--	--	60 - 100%
4343	--	--	--	--	--	60 - 100%
4543	--	--	--	--	--	60 - 100%
4643	0.10	0.05	--	--	--	60 - 100%
5005	--	--	0.10	--	--	60 - 100%
5016	0.20	0.4-0.7	0.10	--	--	60 - 100%
5042	--	--	0.10	--	--	60 - 100%
5050	--	--	0.10	--	--	60 - 100%
5051	--	--	0.10	--	--	60 - 100%
5052	--	--	0.15-0.35	--	--	60 - 100%
5056	--	--	0.05-0.20	--	--	60 - 100%
5082	--	--	0.15	--	--	60 - 100%
5083	--	0.40-1.0	0.05-0.25	--	--	60 - 100%
5086	--	--	0.05-0.25	--	--	60 - 100%
5151	--	--	0.10	--	--	60 - 100%
5154	--	--	0.15-0.35	--	--	60 - 100%
5182	--	--	0.10	--	--	60 - 100%
5183	--	0.50-1.0	0.05-0.25	--	--	60 - 100%
5252	--	--	--	--	--	60 - 100%
5254	--	--	0.15-0.35	--	--	60 - 100%
5352	--	--	0.10	--	--	60 - 100%
5356	--	--	0.05-0.20	--	--	60 - 100%
5357	--	--	--	--	--	60 - 100%
5454	--	0.50-1.0	0.05-0.20	--	--	60 - 100%
5456	--	0.50-1.0	0.05-0.20	--	--	60 - 100%
5457	--	--	--	--	--	60 - 100%
5552	--	--	--	--	--	60 - 100%
5554	--	0.50-1.0	0.05-0.20	--	--	60 - 100%
5556	--	0.50-1.0	0.05-0.20	--	--	60 - 100%
5652	--	--	0.15-0.35	--	--	60 - 100%
5654	--	--	0.15-0.35	--	--	60 - 100%
5657	--	--	--	--	--	60 - 100%
5754	--	0.50	0.30	--	--	60 - 100%
6003	--	--	0.35	--	--	60 - 100%
6005	--	--	0.10	--	--	60 - 100%
6006	--	--	0.10	--	--	60 - 100%
6009	--	--	0.10	--	--	60 - 100%
6010	--	--	0.10	--	--	60 - 100%
6013	0.6-1.1	--	0.10	--	--	60 - 100%
6017	0.05-0.20	--	0.10	--	--	60 - 100%
6053	0.10	--	0.15-0.35	--	--	60 - 100%
6060	0.10	0.10	0.05	--	--	60 - 100%
6061	0.15-0.40	--	0.04-0.35	--	--	60 - 100%
6063	0.10	--	0.10	--	--	60 - 100%
6066	0.7-1.2	0.6-1.1	0.40	--	--	60 - 100%
6070	0.15-0.4	0.4-1.0	0.10	--	--	60 - 100%
6082	0.10	0.4-1.0	0.25	--	--	60 - 100%
6101	--	--	--	--	--	60 - 100%
6105	--	--	0.10	--	--	60 - 100%
6110	0.2-0.7	0.2-0.7	0.04-0.25	--	--	60 - 100%

<u>Alloy</u>	<u>Cu</u>	<u>Mn</u>	<u>Cr</u>	<u>Ni</u>	<u>Miscel.</u>	<u>Footnotes/</u>	<u>Aluminum</u>
6111	0.5-0.9	0.15-0.45	0.10	--	--		60 - 100%
6151	0.35	--	0.15-0.35	--	--		60 - 100%
6201	--	--	--	--	--		60 - 100%
6253	0.10	--	0.04-0.35	--	--		60 - 100%
6351	0.10	--	--	--	--		60 - 100%
6463	0.15	--	--	--	--		60 - 100%
6951	0.15-0.40	--	--	--	--		60 - 100%
7001	1.6-2.6	--	0.18-0.35	--	--		60 - 100%
7005	0.10	--	0.06-2.0	--	--		60 - 100%
7008	0.05	--	0.12-0.25	--	--		60 - 100%
7013	0.10	1.0-1.5	--	--	--		60 - 100%
7021	0.25	--	--	--	--		60 - 100%
7029	0.50-0.9	--	--	--	--		60 - 100%
7039	0.10	--	0.15-0.25	--	--		60 - 100%
7046	0.25	--	0.20	--	--		60 - 100%
7049	1.2-1.9	--	0.10-0.22	--	--		60 - 100%
7050	2.0-2.6	--	--	--	--		60 - 100%
7072	--	--	--	--	--		60 - 100%
7075	1.2-2.0	--	0.18-0.28	--	--		60 - 100%
7076	0.30-1.0	--	--	--	--		60 - 100%
7079	--	--	0.10-0.25	--	--		60 - 100%
7108	0.05	0.05	--	--	4.5-5.5 Zn		60 - 100%
7129	0.50-0.9	--	0.10	--	--		60 - 100%
7146	--	--	--	--	--		60 - 100%
7149	1.2-1.9	--	0.10-0.22	--	--		60 - 100%
7150	1.9-2.5	--	--	--	--		60 - 100%
7175	1.2-2.0	--	0.18-0.28	--	--		60 - 100%
7178	1.7-2.4	--	0.18-0.28	--	--		60 - 100%
7179	0.4-0.8	0.1-0.3	0.10-0.25	--	3.8-4.8 Zn		60 - 100%
7229	0.50-0.9	--	--	--	--		60 - 100%
7277	0.8-1.7	--	0.18-0.35	--	--		60 - 100%
7472	--	--	--	--	--		60 - 100%
7475	1.2-1.9	--	0.18-0.25	--	--		60 - 100%
8001	--	--	--	0.9-1.3	--		60 - 100%
8076	--	--	--	--	--		60 - 100%
8111	--	--	--	--	--		60 - 100%
8177	--	--	--	--	--		60 - 100%
8280	0.7-1.3	--	--	0.20-0.7	5.5-7.0 Sn		60 - 100%
AQ5	--	--	0.10	--	--		60 - 100%
A12AN	--	1.0-1.5	--	--	--		60 - 100%

**Footnotes:**

- (1) Composition in weight percent maximum unless shown as a range or minimum.  
 (2) Formerly designated EC.

Alloys for castings or ingot which can contain WHMIS-controlled ingredients or substances listed in Section 313 of SARA III in amounts equal to or above the minimum reporting limits. (1)

<u>Alloy</u>	<u>Cu</u>	<u>Mn</u>	<u>Cr</u>	<u>Ni</u>	<u>Miscellaneous</u>
A206.2	4.2-5.0	--	--	--	
208.2	3.5-4.5	--	--	--	
224.2	4.5-5.5	--	--	--	
242.2	3.5-4.5	--	--	1.7-2.3	
A242.2	3.7-4.5	--	0.15-0.25	1.8-2.3	
295.2	4.0-5.0	--	--	--	
296.2	4.0-5.0	--	--	--	
308.2	4.0-5.0	--	--	--	
319.2	3.0-4.0	--	--	0.10	
324.2	--	--	--	0.10	
332.2	2.0-4.0	--	--	0.10	
333.1	3.0-4.0	--	--	0.50	
336.2	0.5-1.5	--	--	2.0-3.0	
354.1	1.6-2.0	--	--	--	
355.2	1.0-1.5	--	--	--	
C355.2	1.0-1.5	--	--	--	
360.2	--	--	--	0.10	
364.2	--	--	0.25-0.5	0.15	
380.2	3.0-4.0	--	--	0.10	
A380.2	3.0-4.0	--	--	0.10	
384.2	3.0-4.5	--	--	0.10	
385.1	2.0-4.0	--	--	0.50	
390.2	4.0-5.0	--	--	--	
A390.1	4.0-5.0	--	--	--	
392.1	--	--	--	0.5	
413.2	--	--	--	0.10	
705.1	--	--	0.2-0.4	--	
707.1	--	--	0.2-0.4	--	
712.2	--	--	0.4-0.6		
713.1	--	--	0.35	0.15	
850.1	0.7-1.3	--	--	0.7-1.3	5.5-7.0 Sn
851.1	0.7-1.3	--	--	0.3-0.7	5.5-7.0 Sn
852.1	1.7-2.3	--	--	0.9-1.5	5.5-7.0 Sn

(1) Composition in weight percent maximum unless shown as a range or minimum.  
 (All alloys contain 60-100% aluminum.)

The following alloys all contain 60-100% aluminum by weight. There are no listed constituents in these alloys which exceed minimum reporting percentage.

100.1	F356.2	C443.2	520.2
130.1	357.1	A444.2	535.2
150.1	A357.2	511.2	A535.1
160.1	359.2	512.2	B535.2
170.1	A360.2	513.2	710.1
356.0	A413.2	514.2	711.1
356.2	443.2	518.2	11AN
A356.2			

Clad alloys which can contain WHMIS-controlled ingredients or substances listed in Section 313 of SARA III in amounts equal to or above the minimum reporting limits. (1)

<u>Alloy Number</u>	<u>Cladding Alloy</u>
Alclad 2014	6003
Alclad 2219	7072
Alclad 2024	1230
Alclad 3003	7072
Alclad 3004	7072
Alclad 5056	6253
Alclad 6061	7072
Alclad 7050	7072
Alclad 7075	7072
Alclad 7475	7072
Alclad 7178	7072
Clad 1100 *	1175
Clad 3003 *	1175

\* Reflector sheet

(1) Composition in weight percent maximum unless shown as a range or minimum. Please reference the following Alcoa Material Safety Data Sheets for these specific aluminum alloys:

Please reference the following Alcoa Material Safety Data Sheets for these specific aluminum alloys:

<u>MSDS No.</u>	<u>Alloys</u>
No. 303 - Aluminum Alloys Containing Beryllium Additions	A357.2, 358.2, 364.2, 4011
No. 333 - Aluminum Alloys Containing Zinc Additions	C8F, C9F
No. 337 - Aluminum Alloys Containing Lithium Additions	Alithalite, Alithalloy, 2090, 2091, 8090, X8092 and X8192
No. 390 - Aluminum Alloys Containing Lead Additions	6262, 2011

NOTE: Other non-registered "C" Alloys are covered by MSDS Nos.C303, C384, C390, C516, and C541.